

at simplifying routine testing procedures may enhance the ability of nonlaboratory personnel, physicians and patients, in particular, to perform tests now done in laboratories.

Although significant, growth will not be the only source of opportunities. As in most occupations, many openings will result from the need to replace workers who transfer to other occupations, retire, or stop working for some other reason.

Earnings

Median annual earnings of medical and clinical laboratory technologists were \$40,510 in 2000. The middle 50 percent earned between \$34,220 and \$47,460. The lowest 10 percent earned less than \$29,240, and the highest 10 percent earned more than \$55,560. Median annual earnings in the industries employing the largest numbers of medical and clinical laboratory technologists in 2000 were as follows:

Hospitals	\$40,840
Medical and dental laboratories	39,780
Offices and clinics of medical doctors	38,850

Median annual earnings of medical and clinical laboratory technicians were \$27,540 in 2000. The middle 50 percent earned between \$22,260 and \$34,320. The lowest 10 percent earned less than \$18,550, and the highest 10 percent earned more than \$42,370. Median annual earnings in the industries employing the largest numbers of medical and clinical laboratory technicians in 2000 were as follows:

Hospitals	\$28,860
Colleges and universities	27,810
Offices and clinics of medical doctors	27,180
Medical and dental laboratories	25,250
Health and allied health services, not elsewhere classified	24,370

According to the American Society for Clinical Pathology, median hourly pay of staff clinical laboratory technologists and technicians in 2000 varied by specialty as follows:

	<i>Beginning</i>	<i>Average</i>	<i>Top</i>
Cytotechnologist	\$16.70	\$21.30	\$24.00
Histotechnologist	13.90	18.00	19.90
Medical technologist	14.00	17.90	20.50
Histologic technician	12.00	15.30	17.30
Medical laboratory technician	11.40	14.00	16.30
Phlebotomist	8.10	9.90	11.80

Related Occupations

Clinical laboratory technologists and technicians analyze body fluids, tissue, and other substances using a variety of tests. Similar or related procedures are performed by chemists and material scientists, science technicians, and veterinary technologists, technicians, and assistants.

Sources of Additional Information

For a list of accredited and approved educational programs for clinical laboratory personnel, contact:

➤ National Accrediting Agency for Clinical Laboratory Sciences, 8410 W. Bryn Mawr Ave., Suite 670, Chicago, IL 60631. Internet: <http://www.naacls.org>

Information on certification is available from:

➤ American Association of Bioanalysts, 917 Locust St., Suite 1100, St. Louis, MO 63101. Internet: <http://www.aab.org>

➤ American Medical Technologists, 710 Higgins Rd., Park Ridge, IL 60068. Internet: <http://www.amt1.com>

➤ American Society for Clinical Pathology, Board of Registry, 2100 West Harrison St., Chicago, IL 60612. Internet: <http://www.ascp.org/bor>

➤ National Credentialing Agency for Laboratory Personnel, P.O. Box 15945-289, Lenexa, KS 66285-5935. Internet: <http://www.nca-info.org>

Additional career information is available from:

➤ American Association of Blood Banks, 8101 Glenbrook Rd., Bethesda, MD 20814-2749. Internet: <http://www.aabb.org>

➤ American Society for Clinical Laboratory Science, 7910 Woodmont Ave., Suite 530, Bethesda, MD 20814. Internet: <http://www.ascls.org>

➤ American Society for Clinical Pathology, 2100 West Harrison St., Chicago, IL 60612. Internet: <http://www.ascp.org>

Dental Hygienists

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Significant Points

- Dental hygienists are projected to be one of the 30 fastest growing occupations.
- Population growth and greater retention of natural teeth will stimulate demand for dental hygienists.
- Opportunities for part-time work and flexible schedules are common.

Nature of the Work

Dental hygienists remove soft and hard deposits from teeth, teach patients how to practice good oral hygiene, and provide other preventive dental care. Hygienists examine patients' teeth and gums, recording the presence of diseases or abnormalities. They remove calculus, stains, and plaque from teeth; take and develop dental x rays; and apply cavity-preventive agents such as fluorides and pit and fissure sealants. In some States, hygienists administer anesthetics; place and carve filling materials, temporary fillings, and periodontal dressings; remove sutures; perform root-planing as a periodontal therapy; and smooth and polish metal restorations. Although hygienists may not diagnose diseases, they can prepare clinical and laboratory diagnostic tests for the dentist to interpret. Hygienists sometimes work chairside with the dentist during treatment.

Dental hygienists also help patients develop and maintain good oral health. For example, they may explain the relationship between diet and oral health, or even the link between oral health and such serious conditions as heart disease and stroke. They also inform patients how to select toothbrushes and show them how to brush and floss their teeth.

Dental hygienists use hand and rotary instruments and ultrasonics to clean and polish teeth, x-ray machines to take dental pictures,



Hygienists clean and examine teeth and gums, noting the presence of diseases or abnormalities.

syringes with needles to administer local anesthetics, and models of teeth to explain oral hygiene.

Working Conditions

Flexible scheduling is a distinctive feature of this job. Full-time, part-time, evening, and weekend schedules are widely available. Dentists frequently hire hygienists to work only 2 or 3 days a week, so hygienists may hold jobs in more than one dental office.

Dental hygienists work in clean, well-lighted offices. Important health safeguards include strict adherence to proper radiological procedures, and use of appropriate protective devices when administering anesthetic gas. Dental hygienists also wear safety glasses, surgical masks, and gloves to protect themselves from infectious diseases.

Employment

Dental hygienists held about 147,000 jobs in 2000. Because multiple jobholding is common in this field, the number of jobs exceeds the number of hygienists. More than half of all dental hygienists worked part time—less than 35 hours a week.

Almost all dental hygienists work in private dental offices. Some work in public health agencies, hospitals, and clinics.

Training, Other Qualifications, and Advancement

Dental hygienists must be licensed by the State in which they practice. To qualify for licensure, a candidate must graduate from an accredited dental hygiene school and pass both a written and clinical examination. The American Dental Association Joint Commission on National Dental Examinations administers the written examination accepted by all States and the District of Columbia. State or regional testing agencies administer the clinical examination. In addition, most States require an examination on legal aspects of dental hygiene practice. Alabama allows candidates to take its examinations if they have been trained through a State-regulated on-the-job program in a dentist's office.

In 2000, the Commission on Dental Accreditation accredited about 256 programs in dental hygiene. Although some programs lead to a bachelor's degree, most grant an associate degree. A dozen universities offer master's degree programs in dental hygiene or a related area.

An associate degree is sufficient for practice in a private dental office. A bachelor's or master's degree usually is required for research, teaching, or clinical practice in public or school health programs.

About half of the dental hygiene programs prefer applicants who have completed at least 1 year of college. However, requirements vary from one school to another. Schools offer laboratory, clinical, and classroom instruction in subjects such as anatomy, physiology, chemistry, microbiology, pharmacology, nutrition, radiography, histology (the study of tissue structure), periodontology (the study of gum diseases), pathology, dental materials, clinical dental hygiene, and social and behavioral sciences.

Dental hygienists should work well with others and must have good manual dexterity because they use dental instruments within a patient's mouth, with little room for error. High school students interested in becoming a dental hygienist should take courses in biology, chemistry, and mathematics.

Job Outlook

Employment of dental hygienists is expected to grow much faster than the average for all occupations through 2010, in response to increasing demand for dental care and the greater substitution of the services of hygienists for those previously performed by dentists. Job prospects are expected to remain very good unless the

number of dental hygienist program graduates grows much faster than during the last decade, and results in a much larger pool of qualified applicants.

Population growth and greater retention of natural teeth will stimulate demand for dental hygienists. Older dentists, who are less likely to employ dental hygienists, will leave and be replaced by recent graduates, who are more likely to do so. In addition, as dentists' workloads increase, they are expected to hire more hygienists to perform preventive dental care such as cleaning, so that they may devote their own time to more profitable procedures.

Earnings

Median hourly earnings of dental hygienists were \$24.68 in 2000. The middle 50 percent earned between \$20.46 and \$29.72 an hour. The lowest 10 percent earned less than \$15.53, and the highest 10 percent earned more than \$35.39 an hour.

Earnings vary by geographic location, employment setting, and years of experience. Dental hygienists who work in private dental offices may be paid on an hourly, daily, salary, or commission basis.

Benefits vary substantially by practice setting, and may be contingent upon full-time employment. According to the American Dental Association's 1999 Workforce Needs Assessment Survey, almost all full-time dental hygienists employed by private practitioners received paid vacation. The survey also found that 9 out of 10 full- and part-time dental hygienists received dental coverage. Dental hygienists who work for school systems, public health agencies, the Federal Government, or State agencies usually have substantial benefits.

Related Occupations

Workers in other occupations supporting health practitioners in an office setting include dental assistants, medical assistants, occupational therapist assistants and aides, physical therapist assistants and aides, physician assistants, and registered nurses.

Sources of Additional Information

For information on a career in dental hygiene and the educational requirements to enter this occupation, contact:

► Division of Professional Development, American Dental Hygienists' Association, 444 N. Michigan Ave., Suite 3400, Chicago, IL 60611. Internet: <http://www.adha.org>

For information about accredited programs and educational requirements, contact:

► Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Suite 1814, Chicago, IL 60611. Internet: <http://www.ada.org>

The State Board of Dental Examiners in each State can supply information on licensing requirements.

Diagnostic Medical Sonographers

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Significant Points

- Sonographers should experience favorable job opportunities as ultrasound becomes an increasingly attractive alternative to radiologic procedures.
- More than half of all sonographers are employed by hospitals, and most of the remainder work in physicians' offices and clinics, including diagnostic imaging centers.
- Beginning in 2005, an associate or higher degree from an accredited program will be required for registration.